

## ABSTRACT

The conventional EDFA has such problems that it is very costly since it requires an external high-energy laser diode and an optical coupling means for optically coupling the pumping light given from the laser diode, and that it must have a long length for obtaining a desired amplification degree. A constitution having an optical waveguide and an pumping light source integrated for solving the problems is also proposed, but it also has a problem in view of downsizing.

This invention proposes a waveguide optical amplifier 1, in which a surface light emission source 3 for pumping driven electrically is provided adjacently to and integrally with an optical waveguide 2 doped with a light-emitting species, in the longitudinal direction of the optical waveguide.